

Local Curriculum Guide				Quarter: 1st 9 Weeks Number of Days: 8		
Course Name: (H) Physics	SAMPLE / PRACTICE SPREADSHEET					
Unit Title: Constant Velocity Model						
Instructional Learning Plan						
Standards	Student Friendly Objectives	Possible Assessment/Evidence of Proficiency	Possible Instructional Strategies	Materials/Resources	Essential Vocabulary	Informational skills integration (technology)
Phy.1.1.1	TSW design an experiment to investigate and describe the motion of a constant-velocity object by making observations, choosing equipment, and obtaining data.	To Diagnose: Discuss with each group the procedure they devised. Their procedure will highlight their understanding of speed/velocity, motion, frame of reference, graphs, and lab procedures	Buggy Lab Part 1: Students will be given constant velocity carts and prompted to devise an experiment and record the appropriate data that will allow them to describe the motion of the buggy. (Students should determine they can measure the distance/position of the buggy in specific time intervals OR the time it requires for buggies to travel a given distance/position) (Approximate time: 60 min)	battery-powered cars (~10 dollars each, 2 per group is ideal)	Location, Position, Distance	HS.TT.1 - Students will have used LoggerPro and other technological devices to solve problems and complete mathematical fits by now. When completing lab practicums at the end of each unit (see final lab) they will evaluate and decide which technology tools (probeware, LoggerPro, Excel, Word, Websites, etc) will help solve the puzzle.
Phy.1.1.2	TSW compute the location of an object at specific times by producing and analyzing graphs of location vs time.	Informal Assessment: Have students draw their graph and show calculations for determining the location at the specified time. Practice: Problems that require students to make predictions based on graphs similar to their group graph.	Buggy Lab Part 2: Pose students with the question to determine the location of the buggy at X seconds. Give each group a time that is NOT in their data table already. Students should not need to obtain new data, but may need to produce a graph. Students should map out the location of the buggy at the specified time. Ideally, students are prevented from using their buggy until a test competition. (Approximate time = 30 min)	White-board Ramps (made from instructions for ~10 dollars per ramp). Students can start, locations, predictions, time intervals, distance intervals etc.		
	TSW describe positive and negative location and displacement by comparing and contrasting the motion of two objects moving different directions.	Informal Assessment: Students will draw their graph, show calculations for determining the collision, and test their prediction. Practice: Problems require students to compare positive and negative displacement of objects	Buggy Lab Part 3: Pose students with the question to determine the location two buggies started from opposite ends will collide. Students will hopefully recognize that if they use position instead of distance traveled their graph will show an obvious intersection. Only give each group one buggy at a time, have students mark their predicted intersection on the surface, and test as part of a competition. (Approximate time = 60 min)	Meter sticks, stopwatches, graph paper or graphing software	Displacement	
	TSW identify the meaning of the slope of the position vs time graph by drawing connections between visual observations and the units on the graph.		Lecture/Group Discussion Show students a scenario where an object moves for a few seconds, stops for a few seconds, and then continues to move. Have students predict a position vs time graph for this object. Then ask students how they could represent this as a velocity vs time graph. Students will predict below their x vs t graph. Then, ask students to calculate the area under each portion and hypothesize the meaning of this information by comparing data and calculating their units.		Speed	
	TSW create a velocity vs time graph and attach meaning to the area under the line by examining the position vs time graph and calculating the velocities.	Practice: Word problems that involve students solving unknown quantities using x vs t or v vs t graphs Quiz: Quick quiz with problems creating graphs and simple calculations.			Velocity	
	TSW create x vs t , v vs t , or verbal descriptions by converting information from a different format.	Practice: Give students problems that require them to determine two of the three factors from the given factor. Students can complete problems on boards and present their results, then complete additional problems as homework	Pose problem prompts where students are given the x vs t , v vs t , or verbal description and asked to determine the two unknown factors.		Acceleration	
	TSW derive mathematical equations for position and velocity by using the relationship between slope of x vs t and area of v vs t .	Practice: Give students problems that use the new equations to solve problems.				
	TSW hypothesize factors that influence the intersection of two buggies on an incline and test their hypothesis by developing a lab procedure and analysis.	Lab Practicum and Lab Report: Students will develop a lab procedure and analysis that will determine the validity of their hypothesis. Students will write a 4 part lab report concludes their results.			Vector	
					Scalar	
					Slope	
					Rate	
					Tangent Line	
					Kinematics	